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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/857,204  
Filing Date: September 18, 2001  
Appellant(s): KELSO ET AL.

**MAILED**  
APR 08 2005  
**GROUP 1700**

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Bruce H. Bernstein  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 11 February 2005.

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**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct, claims 1-37 are rejected.

The brief does not expressly state under this heading what claims are being appealed as required by 37 CFR 41.37(c)(1)(iii). The examiner presumes that claims 1-37 are appealed.

**(4) *Status of Amendments***

The appeal is not an appeal of a Final rejection, but an appeal of a Non-Final rejection. Appellant correctly states that no amendment was filed after the Non-Final rejection of 01 July 2004.

**(5) *Summary of Claimed Subject Matter***

The summary of claimed subject matter contained in the brief is correct.

**(6) *Grounds of Rejection to be Reviewed***

Appellant's statement in the brief of the grounds of rejection to be reviewed is correct.

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**(7) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Prior Art of Record**

US 384,068	Paterson et al.	6-1888
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US 2,044,511	Ryschikewitsch	6-1936
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Note: the following factual references are also of record, but are not relied upon as "prior art":

Fishbane et al., Physics for Scientists and Engineers, 1993, Prentice-Hall, Inc., page 504.

NASA Glossary from [nas.nasa.gov](http://nas.nasa.gov)

**(9) Grounds of Rejection**

The following grounds of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC §§ 101 and 112***

Claims 1-32, 34, 35 and 37 are rejected under 35 U.S.C. 101 and 35 U.S.C. 112, second paragraph:

Independent claim 1 recites both a product, "a fluid mixing device", and method steps for using the device, "a fluid flow from said first fluid inlet and/or from said second fluid inlet establishing a recirculating vortex system within said chamber and resulting in a mixture of fluids from said first fluid inlet and said second fluid inlet(s) being directed through said mixed fluid outlet(s)". Analogously, independent claim 34 recites the method step(s) "a fluid flow from said first fluid inlet and said at least on second fluid inlet establishing a recirculating vortex system within said chamber and a mixture of

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fluids from said first fluid inlet and said at least one second fluid inlet being emitted through said mixed fluid outlet” in an otherwise apparatus claim. MPEP 2173.05(p)(II) indicates, based upon *Ex parte Lyell*, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), that such claims should be rejected under section 112 second paragraph as ambiguous and under section 101 as nonstatutory because the invention must only be in a single statutory class (*Lyell* at 1551). While, of course, nothing is necessarily wrong with having a functional limitation in a device claim, these claims (unlike independent claim 33) go beyond reciting a functional limitation to recite an actual step of “establishing a recirculating vortex system”. Appellant, when responding to prior art rejections, insists that a reference can not be anticipatory under section 102 unless the above quoted method step (establishing a recirculating vortex system) is expressly or inherently disclosed, particular, quoting the brief starting at the sentence bridging pages 9 and 10:

the Examiner also asserts at page 5 of the Official Action that “[t]he basis for the rejection is not that the reference discloses (expressly, implicitly, or inherently) the method step(s)” (emphasis in original). [ ] Because a § 102 rejection is only proper if the reference applied by the Examiner explicitly or inherently discloses each and every feature recited in the claimed invention...

In other words, throughout the prosecution history, upon the examiner treating the claims as purely product or machine claims for the purposes of sections 102 and 103, applicant/appellant responds that the examiner has improperly ignored the method step limitation(s), that “establishing a recirculating vortex system” is not an intended use, but a step that “affirmatively occurs” (see response filed 04 June 2003, last line of page 14, and page 16 lines 3-10). Therefor, especially in view of applicant/appellant’s statements on the record that the acts recited in these claims are not just intended uses,

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but acts which "affirmatively occur", it is of paramount importance that the precedent of *Lyell, supra.* be followed.

***Claim Rejections - 35 USC § 102***

For purposes of the consideration of the claims with regard to the prior art, the examiner has treated all the claims as though they were product/machine claims, evaluating any acts recited in the claims as to the capability of the prior art devices to accomplish or be used to accomplish the acts recited.

Claims 1, 20-23 and 25-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Patterson et al. (US 384,068). Regarding claim 1, Patterson ('068) discloses a fluid mixing device including a chamber ("A" defining the bottom and sides of the chamber and "H" defining the top of the chamber), a bluff body (H) defining one end of the chamber, a first fluid inlet (D) disposed toward an opposite end of the chamber from said bluff body and arranged to direct fluid toward said bluff body (see Fig. 1), a region substantially surrounding said bluff body including a flow divider (G,C,C') defining at least one second fluid inlet (defined between G and A) and at least one mixed fluid outlet (between H and G). While claim 1 includes recitations concerning a fluid flow and acts involving the fluid flow, specifically, "a fluid flow from said first fluid inlet and/or from said second fluid inlet establishing a recirculating vortex system within said chamber and resulting in a mixture of fluids from said first fluid inlet and said second fluid inlet(s) being directed through said mixed fluid outlet(s)", "apparatus claims cover what a device *is*, not what a device *does*" (emphasis in original) *Hewlett Packard Co. v. Bausch & Lomb Inc.* 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Also,

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"[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim" *Ex parte Thilbault*, 164 USPQ 666, 667 (Bd. App. 1969). The basis for rejection is not that the reference discloses (explicitly, implicitly, or inherently) the method step(s) "a fluid flow from said first fluid inlet and/or from said second fluid inlet establishing a recirculating vortex system within said chamber and resulting in a mixture of fluids from said first fluid inlet and said second fluid inlet(s) being directed through said mixed fluid outlet(s)".

However, to the extent that the claimed invention is a machine or product, and to the extent the steps could be considered a functional limitation thereto (a capability to be used to carry out the step(s)), the examiner points out that (quoting MPEP 2112.01 ), "WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED INHERENT" (block capitalization in original). The first inlet, second inlet and outlet of the reference are configured and arranged in the same manner as those of the instant invention, with the first inlet at the bottom center, the second inlet at the top circumference, and the outlet inward with respect to the second inlet. The extreme structural homology (see instant Fig. 7f versus Patterson) creates a strong presumption of inherency of the capability to achieve the recited fluid flow pattern. As applicant was advised throughout prosecution, "the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristic of his claimed product" *In re Fitzgerald* 205 USPQ 594, 596 (CCPA 1980) and "where the Patent Office has reason to believe that a functional limitation asserted

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to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon” *In re Swinehart* 169 USPQ 226, 229. Regarding claim 20, the flow divider protrudes beyond said bluff body (see Fig. 1). Regarding claim 21, the flow divider extends into said chamber (see Fig. 1). Regarding claim 22, said first fluid inlet is spaced toward said bluff body from said opposite end of the chamber (see Fig. 1). Regarding claim 23, device of Patterson ('068) necessarily meets the limitation of claim 23 because the inlet is between the bluff body and the opposite end of the chamber. Regarding claim 25, said chamber is formed by a generally cup-shaped body (A) with said bluff body disposed at or adjacent an open end (see Fig. 1). Regarding claim 26, said first fluid inlet is centrally disposed in the base of said cup (see Fig. 1). Regarding claim 27, said flow divider extends between the wall of said cup adjacent the open end and said bluff body (see Fig. 1). Regarding claim 28, the flow divider is fixed to the wall of said cup (see Fig. 1). Regarding claim 29, the mixing device is a burner (see title). Regarding claims 30-32, while, “[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim” *Ex parte Thilbault*, supra., the reference discusses the first inlet supplying combustible, hydrocarbon fuel (see page 1, lines 15-20) and the second inlets supplying air (see page 1 lines 58-61; Fig. 1). Regarding claim 33, Patterson ('068) discloses a fluid mixing device including a chamber (“A” defining the bottom and sides of the chamber and “H” defining the top of the chamber), a bluff body



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(H) defining one end of the chamber, a first fluid inlet (D) disposed toward an opposite end of the chamber from said bluff body and arranged to direct a first fluid toward said bluff body (see Fig. 1), a region substantially surrounding said bluff body including a flow divider (G,C,C') defining at least one second fluid inlet (defined between G and A) configured to provide a second fluid to said chamber and at least one mixed fluid outlet (between H and G) configured to emit a mixture of said first fluid and said second fluid from said chamber while at least one second fluid inlet provides a second fluid to said chamber. Claim 33 additionally recites "said first and second inlets and said mixed fluid outlet being configured and positioned so that a fluid flow from said first fluid inlet and said at least one second fluid inlet establishes a recirculating vortex system within said chamber that mixes said first fluid and said second fluid". It is considered that this recitation does not require the act "a fluid flow from said first fluid inlet and said at least one second fluid inlet establishes a recirculating vortex system within said chamber that mixes said first fluid and said second fluid" be performed, but that the device be capable of being used to perform such an act. "[A]pparatus claims cover what a device *is*, not what a device *does*" (emphasis in original) *Hewlett Packard Co. v. Bausch & Lomb Inc.* *supra*. Also, "[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim" *Ex parte Thibault*, *supra*. Regarding the capability of the device to be used to perform the act, (quoting MPEP 2112.01), "WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED INHERENT"

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(block capitalization in original). The first inlet, second inlet and outlet of the reference are configured and arranged in the same manner as those of the instant invention, with the first inlet at the bottom center, the second inlet at the top circumference, and the outlet inward with respect to the second inlet. The extreme structural homology (see instant Fig. 7f versus Patterson) creates a strong presumption of inherency of the capability to achieve the recited fluid flow pattern. As applicant was advised throughout prosecution "the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristic of his claimed product" *In re Fitzgerald*, supra. and "where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon" *In re Swinehart*, supra. Regarding claim 34, Patterson ('068) discloses a fluid mixing device including a chamber ("A" defining the bottom and sides of the chamber and "H" defining the top of the chamber), a bluff body (H) defining one end of the chamber, a first fluid inlet (D) disposed toward an opposite end of the chamber from said bluff body that directs a first fluid toward said bluff body (see Fig. 1), a region substantially surrounding said bluff body including a flow divider (G,C,C') defining at least one second fluid inlet (defined between G and A) that provides a second fluid to said chamber and at least one mixed fluid outlet (between H and G) that emits a mixed fluid. While claim 34 includes recitations concerning a fluid flow and acts involving the fluid flow, specifically, "a fluid flow from said first fluid inlet and said at

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least one second fluid inlet establishing a recirculating vortex system within said chamber and a mixture of fluids from said first fluid inlet and said at least one second fluid inlet being emitted through said mixed fluid outlet”, “apparatus claims cover what a device *is*, not what a device *does*” (emphasis in original) *Hewlett Packard Co. v. Bausch & Lomb Inc.*, supra. Also, “[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim” *Ex parte Thilbault*, supra. The basis for rejection is not that the reference discloses (explicitly, implicitly, or inherently) the method step(s) “a fluid flow from said first fluid inlet and said at least one second fluid inlet establishing a recirculating vortex system within said chamber and a mixture of fluids from said first fluid inlet and said at least one second fluid inlet being emitted through said mixed fluid outlet”. However, to the extent that the claimed invention is a machine or product, and to the extent the steps could be considered a functional limitation thereto (a capability to be used to carry out the step(s)), the examiner points out that (quoting MPEP 2112.01), “WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED INHERENT” (block capitalization in original). The first inlet, second inlet and outlet of the reference are configured and arranged in the same manner as those of the instant invention, with the first inlet at the bottom center, the second inlet at the top circumference, and the outlet inward with respect to the second inlet. The extreme structural homology (see instant Fig. 7f versus Patterson) creates a strong presumption of inherency of the capability to achieve the recited fluid flow pattern. As

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applicant was advised throughout prosecution, "the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristic of his claimed product" *In re Fitzgerald*, supra. and "where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon" *In re Swinehart*, supra. Regarding claim 35-37, while "the manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself" *In re Casey* 152 USPQ 235 (CCPA 1967), the reference uses arrows in Fig. 1 to depict that a direction of fluid entry to said chamber from said first fluid inlet is substantially opposite a direction of fluid entry to said chamber from said at least one second fluid inlet.

Claims 1-9 and 20-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Ryschkewitsch (US 2,044,511). Ryschkewitsch ('511) discloses two embodiments, the embodiment of Figs. 1 and 2 and the embodiment of Figs. 3 and 4. While both embodiments are considered to anticipate all the independent claims, some of the dependent claims are only anticipated by the embodiment of Figs. 3 and 4. For example, only the embodiment of Figs. 3 and 4 anticipates claims 5-7 which require that "said bluff body includes a centrally disposed aperture". Regarding claim 1, Ryschkewitsch ('511) discloses a fluid mixing device including a chamber (housing "1" and sleeve "4" defining the sides and bottom of the chamber), a bluff body (including a

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center annulus "17" in Fig. 3; 8' and/or 8 in Fig. 1) defining one end of the chamber, a first fluid inlet (2) disposed toward an opposite end of the chamber from said bluff body and arranged to direct fluid toward said bluff body, a region substantially surrounding said bluff body including a flow divider (including another, more radially outward annulus 17 and radial ribs 18 in Figs. 3 and 4; 7 in Fig. 1) defining at least one second fluid inlet (10 in Fig. 1; space between said more radially outward annulus 18 and the inner wall of housing 1) and at least one mixed fluid outlet (opening above "7" in Fig. 1; and space between said central annulus 17 and said more radially outward annulus 17). While claim 1 includes recitations concerning a fluid flow and acts involving the fluid flow, specifically, "a fluid flow from said first fluid inlet and/or from said second fluid inlet establishing a recirculating vortex system within said chamber and resulting in a mixture of fluids from said first fluid inlet and said second fluid inlet(s) being directed through said mixed fluid outlet(s)", "apparatus claims cover what a device *is*, not what a device *does*" (emphasis in original) *Hewlett Packard Co. v. Bausch & Lomb Inc.*, supra.. Also, "[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim" *Ex parte Thilbault*, supra. The basis for rejection is not that the reference discloses (explicitly, implicitly, or inherently) the method step(s) "a fluid flow from said first fluid inlet and/or from said second fluid inlet establishing a recirculating vortex system within said chamber and resulting in a mixture of fluids from said first fluid inlet and said second fluid inlet(s) being directed through said mixed fluid outlet(s)". However, to the extent that the claimed invention is a machine or product, and to the extent the steps could be

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considered a functional limitation thereto (a capability to be used to carry out the step(s)), the examiner points out that (quoting MPEP 2112.01), "WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED INHERENT" (block capitalization in original). The first inlet, second inlet and outlet of the reference are configured and arranged in the same manner as those of the instant invention, with the first inlet at the bottom center, the second inlet at the top circumference, and the outlet inward with respect to the second inlet. The extreme structural homology creates a strong presumption of inherency of the capability to achieve the recited fluid flow pattern. As applicant was advised throughout prosecution, "the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristic of his claimed product" *In re Fitzgerald*, supra. and "where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon" *In re Swinehart*, supra. Regarding claims 2-7, the bluff body had egress means including a central, circular aperture (see Figs. 3 and 4) and is therefore porous to fluid. Regarding claim 6, the first fluid inlet is directed substantially toward the central aperture (see Fig. 3). Regarding claim 8, said flow divider defines a series of flow channels which form said second fluid inlets and said mixed fluid outlets (see Figs. 3 and 4). Regarding claim 9, alternate ones of said flow

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channels spaced around said bluff body respectively form said second fluid inlets and said mixed fluid outlets (see Figs. 3 and 4). Regarding claim 20, the flow divider protrudes beyond said bluff body (see Figs. 3 and 4). Regarding claim 21, the flow divider extends into said chamber (see Fig. 3). Regarding claim 22, said first fluid inlet is spaced toward said bluff body from said opposite end of the chamber (see Fig. 3). Regarding claim 23, device of Ryschkewitsch ('511) necessarily meets the limitation of claim 23 because the inlet is between the bluff body and the opposite end of the chamber. Regarding claim 24,  $h/L$  is about 0.4 (see Fig. 3). Regarding claim 25, said chamber is formed by a generally cup-shaped body with said bluff body disposed at or adjacent an open end (see Fig. 3). Regarding claim 26, said first fluid inlet is centrally disposed in the base of said cup (see Fig. 3). Regarding claim 27, said flow divider extends between the wall of said cup adjacent the open end and said bluff body (see Figs. 3 and 4). Regarding claim 28, the flow divider is fixed to the wall of said cup (see Figs. 3 and 4). Regarding claim 29, the mixing device is a burner (see title). Regarding claims 30-32, "[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim" *Ex parte Thilbault*, supra. Regarding claim 33, Ryschkewitsch ('511) discloses a fluid mixing device including a chamber (housing "1" and sleeve "4" defining the sides and bottom of the chamber), a bluff body (including a center annulus "17" in Fig. 3; 8' and/or 8 in Fig. 1) defining one end of the chamber, a first fluid inlet (2) disposed toward an opposite end of the chamber from said bluff body and arranged to direct a first fluid toward said bluff body, a region substantially surrounding said bluff

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body including a flow divider (including another, more radially outward annulus 17 and radial ribs 18 in Figs. 3 and 4; 7 in Fig. 1) defining at least one second fluid inlet (10 in Fig. 1; space between said more radially outward annulus 18 and the inner wall of housing 1) configured to provide a second fluid to said chamber and at least one mixed fluid outlet (opening above "7" in Fig. 1; and space between said central annulus 17 and said more radially outward annulus 17) configured to emit a mixture of said first fluid and said second fluid from said chamber while said at least one second fluid inlet provides a second fluid to said chamber. Claim 33 additionally recites "said first and second inlets and said mixed fluid outlet being configured and positioned so that a fluid flow from said first fluid inlet and said at least one second fluid inlet establishes a recirculating vortex system within said chamber that mixes said first fluid and said second fluid". It is considered that this recitation does not require that act "a fluid flow from said first fluid inlet and said at least one second fluid inlet establishes a recirculating vortex system within said chamber that mixes said first fluid and said second fluid" to be perform", but that the device being capable of being used to perform such an act. "[A]pparatus claims cover what a device *is*, not what a device *does*" (emphasis in original) *Hewlett Packard Co. v. Bausch & Lomb Inc.* supra. Also, "[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim" *Ex parte Thibault*, supra. Regarding the capability to be used to perform the act, applicant is advised that (quoting MPEP 2112.01), "WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS



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ARE PRESUMED INHERENT" (block capitalization in original). The first inlet, second inlet and outlet of the reference are configured and arranged in the same manner as those of the instant invention, with the first inlet at the bottom center, the second inlet at the top circumference, and the outlet inward with respect to the second inlet. The extreme structural homology creates a strong presumption of inherency of the capability to achieve the recited fluid flow pattern. As applicant was advised throughout prosecution, "the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristic of his claimed product" *In re Fitzgerald*, supra. and "where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon" *In re Swinehart*, supra. Regarding claim 34, Ryschkewitsch ('511) discloses a fluid mixing device including a chamber (housing "1" and sleeve "4" defining the sides and bottom of the chamber), a bluff body (including a center annulus "17" in Fig. 3; 8' and/or 8 in Fig. 1) defining one end of the chamber, a first fluid inlet (2) disposed toward an opposite end of the chamber from said bluff body that directs a first fluid toward said bluff body, a region substantially surrounding said bluff body including a flow divider (including another, more radially outward annulus 17 and radial ribs 18 in Figs. 3 and 4; 7 in Fig. 1) defining at least one second fluid inlet (10 in Fig. 1; space between said more radially outward annulus 18 and the inner wall of housing 1) to said chamber that provides a second fluid and at least one mixed fluid

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outlet (opening above "7" in Fig. 1; and space between said central annulus 17 and said more radially outward annulus 17) from said chamber that emits a mixed fluid. While claim 34 includes some additional discussion of what the claimed device is intended to do to a fluid intended to be used in the device, specifically, "a fluid flow from said first fluid inlet and said at least one second fluid inlet establishing a recirculating vortex system within said chamber and a mixture of fluids from said first fluid inlet and said at least one second fluid inlet being emitted through said mixed fluid outlet", "apparatus claims cover what a device *is*, not what a device *does*" (emphasis in original) *Hewlett Packard Co. v. Bausch & Lomb Inc.*, supra. Also, "[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim" *Ex parte Thilbault*, supra. The basis for rejection is not that the reference discloses (explicitly, implicitly, or inherently) the method step(s) "a fluid flow from said first fluid inlet and said at least one second fluid inlet establishing a recirculating vortex system within said chamber and a mixture of fluids from said first fluid inlet and said at least one second fluid inlet being emitted through said mixed fluid outlet". However, to the extent that the claimed invention is a machine or product, and to the extent the steps could be considered a functional limitation thereto (a capability to be used to carry out the step(s)), the examiner points out that (quoting MPEP 2112.01), "WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED INHERENT" (block capitalization in original). The first inlet, second inlet and outlet of the reference are configured and arranged in the same manner as

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those of the instant invention, with the first inlet at the bottom center, the second inlet at the top circumference, and the outlet inward with respect to the second inlet. The extreme structural homolog creates a strong presumption of inherency of the capability to achieve the recited fluid flow pattern. As applicant was advised throughout prosecution, "the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristic of his claimed product" *In re Fitzgerald*, supra. and "where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon" *In re Swinehart*, supra. Regarding claims 35-37, the apparatus of Ryschkewitsch ('511) is capable of being used in the manner discussed in claim 35, for example with fuel gas entering the first inlet (2) and air entering in an opposite direction from said at least one second fluid inlet (for example an orifice defined between the outermost ring 17 and the side wall of the chamber).

### ***Claim Rejections - 35 USC § 103***

Dependent claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patterson et al. (US 384,068). The device of Patterson ('068) was discussed above with regard to the parent claim. Though numerical values are not discussed by the reference, as depicted in Fig. 1, the h/L ratio is approximately 0.6. It is considered that it would have been obvious to one of ordinary skill in the art to have optimized the

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spacing of the inlet and/or bluff body, to create a particular air flow. See page 1, lines 65-90 for a discussion of spacings and air flow.

**(10) Response to Argument**

**Rejection of claims 1-32, 34, 35 and 37 under section 101 and section 112, second paragraph in accordance with *Ex parte Lyell*, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990)**

The brief does not address this ground for rejection in a consistent manner. On pages 7 and 8 appellant denies that independent claims 1 and 34 require method steps. However, on page 9 line 8 to page 10 line 8, appellant contradicts this denial, stating that the examiner has made an "error" by treating the claims as product/machine claims for the purpose of sections 102 and 103 and insisting that unless the "method step(s)" are explicitly or inherently disclosed, the claims cannot be anticipated.

The brief reproduces a claim from *Lyell* and explains how the applicants in *Lyell* were much more straight-forward about the fact that the claim recited both a product/machine and steps of using it. The examiner agrees that the instant claims are less clear, in comparison with those of *Lyell*, concerning whether method steps are required. This lack of clarity, together with applicant/appellant's contradictory statements concerning the issue throughout the prosecution history, makes all-the-more important that the claims be held indefinite under section 112, second paragraph.

**Rejection of claims 1, 20-23 and 25-37 under section 102(b) as anticipated by Patterson et al. (US 384,068)**

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As mentioned above, on pages 9 and 10 of brief, appellant alleges that the examiner has made an "error" in considering Patterson ('068) to be anticipatory while at the same time stating the method steps of the claims being disclosed by Patterson ('068) is not the basis for rejection. Particular, quoting the brief starting at the sentence bridging pages 9 and 10:

the Examiner also asserts at page 5 of the Official Action that "[t]he basis for the rejection is not that the reference discloses (expressly, implicitly, or inherently) the method step(s)" (emphasis in original). [ ] Because a § 102 rejection is only proper if the reference applied by the Examiner explicitly or inherently discloses each and every feature recited in the claimed invention...

The examiner would like to again acknowledge that the basis for rejection is not that any of the method step of any of the claims is disclosed (explicitly, implicitly such as according to the instantly-envisaged doctrine, or inherently) by Patterson ('068). In this regard, the examiner does not expect that the board would affirm both the section 101 rejection based upon the presence of method steps in otherwise apparatus claims, and the section 102 rejection. In this sense, the 102 and 103 rejections may be considered in the alternative to the 101 rejection (for claims rejected on both grounds). The section 102 rejection is based solely upon considering the claims to be actual apparatus claims. The acts recited in the claims, such as "establishing a recirculating vortex system" have been considered as to the capability of the prior art devices to accomplish or be used to accomplish the acts recited.

Appellant does not even attempt to point a structural element or feature of an independent claim which is not disclosed by Patterson. Appellant relies entirely upon the functional recitations of the independent claims to argue patentability. As explained

in *In re Schreiber* 44 USPQ2d 1429 (CA FC 1997): "A patent applicant is free to recite features of an apparatus structurally or functionally. [ ] Yet, choosing to define an element functionally, *i.e.*, by what it does, carries with it a risk. As our predecessor court stated in *Swinehart*, 439 F.2d at 213, 169 USPQ at 228: where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon".

The examiner considers that the "reason to believe" standard of *Swinehart* is met in the instant case because of the structural similarity/identity between the device of Patterson and, most particularly, the embodiment of Fig. 7f of the instant invention. See also Fig. 8b.

While the examiner considers that for the above reason the burden of proof has been shifted to appellant to "prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon", as explained in the Non-Final rejection the factual references "NASA glossary" and "Fishbane et al. Physics for Scientists and Engineers" provide further evidence as to the capability of the prior art to perform the acts recited. In the NASA glossary, the entry for "vortex" makes clear that a "vortex" is necessarily recirculating. The phrase "recirculating vortex" is redundant. Under the entry for "vortex" it is stated that "Turbulent flow is made up of many little vortices". The reference "Physics for Scientists and Engineers", page 504, explains that for any fluid situation, sufficient fluid velocity creates turbulent flow, (and therefore vortices or,

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redundantly, recirculating vortices). Therefore, one need only supply fluid to the prior art device at sufficient velocity to necessitate the presence of vortices. Fishbane also explains that this threshold velocity is relatively low in a typical circumstance (for example 0.3 m/s). While the relied upon references may not explicitly or inherently disclose the act of establishing a vortex, there is overwhelming reason to believe that the device of Patterson ('086) is capable of being used to achieve the acts applicants have included in the claims, including establishing a vortex.

The brief includes statements such as "Patterson does not describe or suggest a "recirculating vortex system" (page 14, line 10) and "the Patterson reference does not disclose either a 'vortex' or 'turbulent flow' (page 15, lines 10-11). Again, the examiner has considered the claims as if they were product/apparatus claims. The basis of the rejection is not that Patterson discloses a step of establishing a recirculating vortex system, or a vortex or a turbulent flow, but only that the device of Patterson would be capable of being used such that a recirculating vortex system is established.

Applicant goes on to catalog all the limitations of the dependent claims on pages 21 to 22 of the brief. The grounds for rejection are clearly set forth above. Applicant makes arguments regarding claims 21, 25, 27 and 28 on pages 22 to 23 of the brief, but ignores the grounds for rejection and instead pretends that the chamber of Patterson is only that which is between plates F and H. The examiner kindly provided applicant with a red ink marked-up drawing of exactly what was considered the chamber in paper No. 13 at page 11, but appellant still ignores the grounds for rejection. The chamber of Patterson is defined at the bottom and sides by "A" and at the top by "H". The divider

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"C" clearly extends into the chamber in accordance with claim 21. "A" is cup shaped as seen in Fig. 1 in accordance with claim 25. Regarding claim 27, said flow divider extends between the wall of said cup adjacent the open end and said bluff body (see Fig. 1). Regarding claim 28, the flow divider is fixed to the wall of said cup (see Fig. 1). Regarding claims 35-37, while the intended direction of flow of fluid intended to be present in an apparatus during an intended operation is not limiting in a device claim, as clearly seen in Fig. 1 of Patterson ('068) arrows at the left and right with "A" depict flow in the opposite direction of the arrow within "D".

**Rejection of claim 24 under section 103(a) as anticipated by Patterson et al. (US 384,068)**

Again, applicant ignores the grounds for rejection and pretends that the chamber of Patterson is only that which is between plates F and H. The examiner kindly provided applicant with a red ink marked-up drawing of exactly what was considered the chamber in paper No. 13, but appellant still ignores the grounds for rejection. The chamber of Patterson is defined at the bottom and sides by "A" and at the top by "H". Conduit "D" of Patterson clearly extends up through the bottom of "A" and into the chamber.

**Rejection of claims 1-8 and 20-37 under section 102(b) as anticipated by Ryschkewitsch (US 2,044,511).**

Appellant argues that Ryschkewitsch ('511) does not disclose the claimed step of establishing a recirculating vortex system. As explained above, for the purposes of sections 102 and 103, the examiner has treated all the claims as if the were apparatus claims, evaluating any acts recited in the claims as to the capability of the prior art



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devices to accomplish or be used to accomplish the acts recited. The basis for rejection is not that Ryschkewitsch ('511) discloses the method step "...establishing a recirculating vortex system...", but instead that the device of Ryschkewitsch ('511) would be capable of being used such that a recirculating vortex system is established. As explained in *In re Schreiber* 44 USPQ2d 1429 (CA FC 1997): "A patent applicant is free to recite features of an apparatus structurally or functionally. [ ] Yet, choosing to define an element functionally, *i.e.*, by what it does, carries with it a risk. As our predecessor court stated in *Swinehart*, 439 F.2d at 213, 169 USPQ at 228: where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon". The first inlet, second inlet and outlet of the reference are configured and arranged in the same manner as those of the instant invention, with the first inlet at the bottom center, the second inlet at the top circumference, and the outlet inward with respect to the second inlet.

While the examiner considers that for the above reason the burden of proof has been shifted to appellant to "prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon", as explained in the Non-Final rejection the factual references "NASA glossary" and "Fishbane et al. Physics for Scientists and Engineers" provide further evidence as to the capability of the prior art to perform the acts recited. In the NASA glossary, the entry for "vortex" makes clear that a "vortex" is

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necessarily recirculating. The phrase "recirculating vortex" is redundant. Under the entry for "vortex" it is stated that "Turbulent flow is made up of many little vortices". The reference "Physics for Scientists and Engineers", page 504, explains that for any fluid situation, sufficient fluid velocity creates turbulent flow, (and therefore vortices or, redundantly, recirculating vortices). Therefore, one need only supply fluid to the prior art device at sufficient velocity to necessitate the presence of vortices. Fishbane also explains that this threshold velocity is relatively low in a typical circumstance (for example 0.3 m/s) and Ryschkewitsch ('511) explains that fluid should remain in the chamber 0.08-0.8 m chamber for only 0.005 to 0.02s (see col. 2 of page 1 lines 4-8 and col. 2 of page 2 line 63), requiring a flow of at least  $0.08/0.02 = 4$  m/s. While the references may not explicitly, inherently, or intrinsically disclose the act of establishing a vortex, there is overwhelming reason to believe that the device of Ryschkewitsch ('511) is capable of being used to achieve the acts applicants have included in the claims, including establishing a vortex.

Appellant pretends that the grounds for rejection only refer to the "insert body 8" being the "bluff body" and ignores plate 8' referred to in the grounds for rejection.

Reference character "7" denotes a ribbed annulus which clearly divides inlet and outlet flow and is properly considered a "flow divider" in accordance with the limitations of the rejected claims.

Appellant complains that the examiner has selected one of "17" as the bluff body (a radially inward or center one) and another (a more radially outward one) as part of the "flow divider", without any "basis". However, to the extent the claims are apparatus

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claims, the reference need only describe a structure within the scope of the claims to anticipate. The reference need not use the same words applicant's uses for the reference to anticipate the claims. The reference need not number parts in the drawings in the same way applicant would to anticipate the claims.

Appellant states that "no weight is being given to the differences of an 'inlet' and an 'outlet'. Of course the only difference between 'inlet' and 'outlet' is how an opening is used in a particular method. If I hand appellant a soda straw could appellant point out what end is the inlet and what end is the outlet?

Appellant goes on to catalog all the limitations of the dependent claims on pages 32-34 of the brief. The grounds for rejection are clearly set forth above. Regarding claims 35-37, while the intended direction of flow of fluid intended to be present in an apparatus during an intended operation is not limiting in a device claim, as clearly seen in Fig. 1 of Ryschkewitsch ('511), arrows depicting flow at the left and right point in the opposite direction with respect to flow from the bottom center. Regarding claim 3, as seen in Figs. 1 and 4, the bluff bodies (8' and 17) have openings making them porous. Regarding claim 9, there are many ways to use a particular device. One can choose to drink from one end of a soda straw today and the other end tomorrow. To what openings one adds material and from what openings one withdraws material is limiting in method claims, not apparatus claims. Both the device of the instant invention and the prior art device are static structures with no disclosed moving parts, no check valves, no pumps, nothing that would create flow or determine the direction of flow. Only when

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one chooses to attach a fluid pressure source to one or more of the openings is there fluid flow.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



David L. Sorkin  
Primary Examiner  
Art Unit 1723

DLS

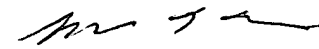
April 6, 2005

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